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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.	
10/809,484	03/26/2004	Mitsuru Iwasaki	2004-0395A	8321	
513 7	7590 04/26/2005		EXAM	INER	
WENDEROTH, LIND & PONACK, L.L.P. 2033 K STREET N. W.			FLANIGAN	Flanigan, allen j	
SUITE 800	J1 11. 11.		ART UNIT	PAPER NUMBER	
WASHINGTON, DC 20006-1021			3753		

DATE MAILED: 04/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

1) Responsive to communication(s) filed on				Ć.			
Examiner Art Unit Art Unit Art Unit Area Art Unit Area A			Application No.				
Allen J. Flanigan 3753 ANORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION. A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION. If the period for reply specified allow the intermination of the period for reply specified allows is less than thirty (30) days, a reply within the stabutory minimum of thirty (30) days, will be considered timely. If the period for reply specified dever, the maximum statings period will apply and will again 25 (60) MONTH? from the mailing date of this communication. For the period for reply specified dever, the maximum statings period will apply and will again 25 (60) MONTH? from the mailing date of this communication for reply reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any reply received by the Called the communication is non-final. 3) Responsive to communication (s) Filed on		Office Action Comme	10/809,484	IWASAKI ET AL.			
The MALLNG DATE of this communication appears on the cover sheet with the correspondence address → Period for Reply A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION. Edentions of time may be available under the provision of 3 CFR 1 136(a). In no event, however, may a reply be timely filled after 13k (5) 46/04715 from the realing date of this communication, of 3 CFR 1 136(a). In no event, however, may a reply be timely filled after 13k (5) 46/04715 from the realing date of this communication, and the provision of the provision of the provision of the provision of 3 CFR 1 136(a). In no event, however, may a reply be timely filled after 13k (5) 46/04715 from the realing date of this communication, and the provision of the provision of the provision of 3 CFR 1 136(a). In no event, however, may a reply be timely filled after 13k (5) 46/04715 from the realing date of this communication of the provision		Office Action Summary	Examiner	Art Unit			
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THE MAILING DATE OF THIS COMMUNICATION. Extensions of time may be suitable under the provisions of 37 CPR 1.13(a). In no event, however, may a reply be timely filed after SIX (8) MONTH'S from the maining date of this communication. **Fallute to reply within the set or advanced period for reply value and the set of the content of the	Period fo	The MAILING DATE of this communication app or Reply	ears on the cover sheet with the c	orrespondence address			
1) Responsive to communication(s) filed on	THE - Exte after - If the - If NC - Failt Any	MAILING DATE OF THIS COMMUNICATION. Insions of time may be available under the provisions of 37 CFR 1.13 SIX (6) MONTHS from the mailing date of this communication. Provided the provided showe is less than thirty (30) days, a reply operiod for reply is specified above, the maximum statutory period warre to reply within the set or extended period for reply will, by statute, reply received by the Office later than three months after the mailing	36(a). In no event, however, may a reply be timed within the statutory minimum of thirty (30) days will apply and will expire SIX (6) MONTHS from cause the application to become ABANDONE	nely filed s will be considered timely. the mailing date of this communication. D (35 U.S.C. § 133).			
2a) ☐ This action is FINAL. 2b) ☐ This action is non-final. 3 ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213. Disposition of Claims 4 ☐ Claim(s) 1-6 is/are pending in the application. 4a) Of the above claim(s) is/are withdrawn from consideration. 5 ☐ Claim(s) is/are lallowed. 6 ☐ Claim(s) is/are rejected. 7 ☐ Claim(s) is/are rejected to. 8 ☐ Claim(s) are subject to restriction and/or election requirement. Application Papers 9 ☐ The specification is objected to by the Examiner. 10 ☐ The drawing(s) filed on is/are: a ☐ accepted or b) ☐ objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheel(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d). 11 ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152. Priority under 35 U.S.C. § 119 12 ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f). a) ☐ All b) ☐ Some * c) ☐ None of: 1 ☐ Certified copies of the priority documents have been received. 2 ☐ Certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)). *See the attached detailed Office action for a list of the certified copies not received. Attachment(e) 1 ☐ Notice of References Cited (PTO-892) 2 ☐ Moltice of Draftsperson's Patent Drawing Review (PTO-948) 3 ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) 5 ☐ Notice of Torftsperson's Patent Drawing Review (PTO-158)	Status			•			
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a) All b) Some * c) None of: 1. Certified copies of the priority documents have been received. 2. Certified copies of the priority documents have been received in Application No 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)). * See the attached detailed Office action for a list of the certified copies not received. Attachment(s) 1) Notice of References Cited (PTO-892) 2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) 1 Notice of Informal Patent Application (PTO-152)	Priority ι	under 35 U.S.C. § 119					
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The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al. in view of Haussmann.

As noted in the previous Office action, Kato et al. show a heat exchanger tube plate with slanted portions extending between the plane of the base and the tube receiving holes (Fig. 2, Fig. 4C, Fig. 12C, for example) that are disposed at an angle of approximately 30 degrees. Note that Kato et al. indicates the use of plate fins 15. As noted previously, the preferred values for tube plate thickness are 0.8 - 1.2 mm; for tube wall thickness, 0.25 - 0.5 mm. Hausmann shows firstly that the use of corrugated air centers or fins is well known in the art; it would have been an obvious substitution of equivalents to replace the plate fins 15 of Kato et al. with the corrugated fins taught in Haussmann. Further, Hausmann teaches that it is known to have tube wall thickness be as low as 0.2 mm. Those skilled in the art recognize that the thickness of the wall separating media exchanging heat is a result effective parameter in that the thicker this barrier, the more it impedes heat transfer, yet making this wall too thin can carry penalties for too weakened a structure (particularly tubes intended to be capable of withstanding internal pressure). Thus, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to make the tube walls of Kato et al. as thin as possible for a given application. The thus-effected combination of teachings of

Kato et al. and Haussmann would meet the limitations of claim 1; the formula given to indicate the value of the slant angle produces values (using tube wall thickness of 0.2 and tube sheet thickness of 1.0 mm) of $\theta \ge 25$ degrees. As noted, Kato et al. show a slant angle of approximately 30 degrees.

Claims 2-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant's arguments with respect to claim 1 have been considered but are most in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen J. Flanigan whose telephone number is (571) 272-4910. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gene Mancene can be reached on (571) 272-4930. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Allen J. Flanigan Primary Examiner Art Unit 3753